Chapter 2 Affected Environment, Environmental Consequences, and Avoidance, Minimization and/or Mitigation Measures

2.1 Overview

This chapter presents the result of Caltrans' analysis of environmental issues relevant to this project. The following topics are discussed: aesthetics, cultural resources, water quality, storm water run-off, and biology. These topics were identified from completion of the California Environmental Quality Act (CEQA) checklist, which appears in Appendix A. In addition to information presented here, this analysis is also based on supporting technical studies and other reference materials not attached to this document. A list of these appears in Chapter 5. They are available for examination and at the following address: California Department of Transportation, District 4, Office of Environmental Analysis, 111 Grand Avenue, Oakland California, 94623-0660; telephone (510) 286-6198 (Voice), or use the California Relay Service TTY number, 711.

2.1.1 Resource Areas with No Adverse Impacts

Completing the CEQA checklist was a part of the initial project screening, whereby qualified Caltrans staff assessed the likelihood of adverse environmental impacts based on general knowledge of both the project and its environmental setting. The initial screening resulted in a finding that there is no potential for adverse project impacts in the following CEQA checklist subject areas: agriculture, air quality, geology and soils, hazards and hazardous materials, hydrology, land use and planning, mineral resources, noise, public utilities and services, recreation, transportation and traffic. In addition the project will have no adverse effects that would trigger a mandatory finding of significance under CEQA. Table 2 states the reason(s) for the "no adverse impact" determination in these areas. The remainder of this chapter covers environmental issues that were determined to require further consideration.

Table 2: No Adverse Impact Determinations Summary	
AGRICULTURE RESOURCES	
	The project will neither convert farmland to non-agricultural use nor conflict with current open space or agriculture land use designations.
AIR QUALITY	
	The completed project will not violate any air quality standard, expose sensitive receptors to substantial pollutant concentrations, or otherwise conflict with the air quality plan. Standard construction management practices are adequate to prevent adverse air quality impacts during construction. This project is classified as a safety project and therefore is exempt from Regional Air Quality Conformity analysis per Title 40 Code of Federal Regulations Section 93.126.
GEOLOGY AND SOILS	
	Because the Bay Area is seismically active, Caltrans routinely conducts detailed geotechnical studies and develops project specific construction features to minimize seismic risks. Project level seismic analysis includes a preliminary geotechnical report to determine soil conditions and local earthquake fault characteristics; and a design report recommending protective measures to be incorporated into final project design. Design recommendations are prepared in accordance with the following document: California Division of Mines and Geology Guidelines for Evaluating and Mitigating Seismic Hazards.
HAZARDS AND HAZARDOUS MATERIALS	
	The project will not result in any increased hazards or hazardous materials risks after construction. During the design phase of project development, once the exact location and amount of land to be excavated is known, detailed soil surveys will be conducted by the Caltrans Office of Environmental Engineering. Any hazardous materials found will be encapsulated or disposed of in accordance with applicable federal and state regulations.
HYDROLOGY AND WATER QUALITY	
	The project will not violate any water quality standards or waste discharge requirements. It will not substantially deplete groundwater supplies or alter existing drainage patterns.
LAND USE AND PLANNING	
	The Town of Discovery Bay supports the widening of CC-4 through this area. This project conforms to the local and county general plans.
MINERAL RESOURCES	
	The project does not conflict with resource recovery plans or operations in the vicinity.
NOISE	
	The project will not cause or contribute to a substantial long-term increase in noise or ground vibration levels because there will be no increase in through traffic capacity. Standard construction management practices are adequate to prevent adverse noise impacts during construction.
POPULATION AND HOUSING	
	The project will not induce unplanned population growth, either directly or indirectly. Existing housing and businesses will not be displaced.
PUBLIC SERVICES	
	The project will not affect provision of existing public services or measurably increase the need for new or physically altered governmental facilities in order to maintain acceptable service ratios, response times or other performance objectives for any public service. Standard Department management practices will preclude substantial adverse impacts during construction.
RECREATION	
	The project will not directly or indirectly reduce the recreational value of any public or private properties.

Table 2: No Adverse Impact Determinations Summary	
TRANSPORTATION/TRAFFIC	
	The project will not cause an increase in traffic that is substantial in relation to the traffic load and capacity of the existing highway. It does not conflict with plans, or programs for bicycling or other alternative transportation means.
VISUAL/AETHETICS	
	Due to limited sight distance and object setbacks, tree replacement will not be possible between Marsh Creek Road and Byron Highway. No developer installed trees will be removed along the Discovery Bay development.
UTILITIES AND SERVICES	
	Existing utilities and services will not be interrupted by construction and will be restored to pre-existing conditions or better afterwards. Standard Caltrans procedures for coordinating temporary service disruptions during construction are considered adequate for this project.
MANDATORY FINDINGS OF SIGNIFICANCE	
	The project widens and improves traffic safety on an existing facility, does not substantially increase existing highway capacity, is consistent with the adopted regional transportation plan, and includes preventive measures to preclude environmental damage during construction. The project, therefore, will not degrade the quality of the environment. It will not cause or contribute to adverse cumulative environmental impacts or cause substantial adverse effects on human beings, either directly or indirectly.

2.2 Cultural Resources

2.2.1 Regulatory Setting

The term "cultural resources" as used in this document refers to historic and archaeological resources. The California Environmental Quality Act (CEQA) and Public Resources Code (PRC) provide for protection of cultural resources. PRC Section 5024.1 established the California Register of Historic Places. Section 5024.5 requires state agencies to provide notice to, and confer with the State Historic Preservation Officer (SHPO) before altering, transferring, relocating, or demolishing state-owned historic resources.

The National Historic Preservation Act of 1966, as amended, (NHPA) sets forth national policy and procedures regarding historic properties, defined as districts, sites, buildings, structures, and objects included in or eligible for the National Register of Historic Places. Section 106 of NHPA requires federal agencies to take into account the effects of their undertakings on such properties and to allow the Advisory Council on Historic Preservation the opportunity to comment on those undertakings, following regulations issued by the Advisory Council on Historic Preservation (36 CFR 800). On January 1, 2004, a Section 106 Programmatic Agreement (PA) between the Advisory Council, FHWA, State Historic Preservation Officer (SHPO), and the Department went into effect for Department projects, both state and local, with FHWA involvement. The PA implements the Advisory Council's regulations, 36 CFR 800, streamlining the Section

106 process and delegating certain responsibilities to the Department. The FHWA's responsibilities under the PA have been assigned to the Department as part of the Surface Transportation Project Delivery Pilot Program (23 CFR 773) (July 1, 2007).

Historic properties may also be covered under Section 4(f) of the U.S. Department of Transportation Act of 1966, which regulates the "use" of land from historic properties.

2.2.2 Affected Environment

In accordance with stipulations VI.B.7 and VIII.A of the PA, Caltrans established the Area of Potential Effect (APE) for this project on April 28, 2005. The APE map overlaid onto project geometric plans includes the Archaeological APE and the Architectural APE boundaries, existing state right-of-way, proposed right-of-way, and parcel lines. Both APEs include the State Route 4 existing and proposed right of ways between Marsh Creek Road and the Old River. This project does not include any other areas of ground disturbance. The Archaeological APE is defined as the area directly disturbed by project activities, including all existing and proposed right-of-way. The Architectural APE encompasses the project footprint and all areas where there is a potential for indirect effect on the historic resources. The majority of the proposed "sliver takes" occur on parcels without built resources, thus these parcels are not included in the Architectural APE.

There are no archaeological resources within the Archaeological APE. The Architectural APE includes six architectural history resources. One of the six resources is a canal. Only the part of the canal that is under the road was included in the APE. All evaluated resources are identified on the APE map.

2.2.3 Direct Impacts

No properties within the APE are currently listed or have been previously determined eligible for the National Register of Historic Places or the California Register of Historic Places. -No properties were determined eligible through survey evaluation. Therefore, no mitigation for such impacts are proposed. Cultural resources were evaluated in compliance with Section 106 of the National Historic Preservation Act of 1966 as amended (16 U.S.C. 470f and 470h-2) and its implemented regulations (36 CFR 800.4). These properties were also evaluated in accordance with Section 15064.5 (a) (2)-(3) of the California Environmental Quality Act (CEQA) Guidelines. The State Historic Preservation Officer concurred by letter dated January 30, 2006 that the six evaluated

resources do not meet criteria for listing in the NRHP and are not resources for the purposes of CEQA.

2.3 Water Quality, and Storm Water Runoff

2.3.1 Regulatory Setting

The primary federal law regulating Water Quality is the Clean Water Act (CWA), which is administered by the U.S. Environmental Protection Agency (EPA). In California, EPA delegates its regulatory authority to the State Water Resources Control Board (SWRCB) and Regional Water Quality Control Boards (RWQCBs). Each RWQCB prepares and adopts a master policy document for managing surface and groundwater quality within its region called the Water Quality Control Plan or Basin Plan. Among other things the Basin Plan identifies water quality problems and establishes beneficial uses for each waterway within its jurisdiction. The SWRCB and RWQCB issue permits to implement the Basin Plan as well as other requirements of the CWA and State Water Code.

The following is a summary of key water quality laws and regulations:

- Section 401 of the CWA requires a water quality certification from the State Board or Regional Board when a project: 1) requires a federal license or permit under CWA Section 404, and 2) will result in a discharge to waters of the United States.
- Section 402 of the CWA establishes the National Pollutant Discharge Elimination System (NPDES) permit system to regulate municipal and industrial storm water discharges, including discharges from highways, which are defined as point source discharges. To ensure CWA compliance and facilitate processing of routine projects, the SWRCB has issued Caltrans a blanket NPDES Statewide Storm Water Permit to regulate storm water discharges from Caltrans facilities (Order No. 99-06-DWQ, CAS000003).
- Project construction activities are subject to a statewide Construction General Permit (Order No. 98-08-DWQ, CAS000002) issued by the SWRCB. The key requirement is preparation of a project specific Storm Water Pollution Prevention Plan (SWPPP), which specifies pollution control measures to be employed during construction. The SWPPP is typically prepared and implemented by the contractor doing the work. Caltrans approves the plan and assures that it is carried out through its construction contract monitoring process.

2.3.2 Affected Environment

The project is located on State Route 4 from Postmile 43.9 to 48.1 in Contra Costa County between Marsh Creek Road and 0.2 mile west of the San Joaquin County Line. Based on the above description, the project is within the Central Valley Regional Water Quality Control Board Region 5 (RWQCB) jurisdiction, which is responsible for implementation of State and Federal water quality protection laws and regulations in the vicinity of the project site.

Caltrans prepared a Water Quality Report for this project (Caltrans 2005A). This section summarizes information contained in that document.

Storm Water

The project site is within San Joaquin Delta Hydrologic Unit (hydrologic sub-area # 544.00) that has a watershed area of approximately 394,400 acres. Storm water from the project drains into ditches paralleling State Route 4 or sheet flow to adjacent flat agricultural fields. In turn, these drain into the various canals, Kellogg Creek, and Old River, eventually draining into the San Joaquin River. The water system within the project area is part of the Western Portion of the Delta Waterway which is Section 303(d) listed for chlorpyrifos, DDT, diazinon, electrical conductivity, group A pesticides, mercury, and unknown toxicity.

The Region 5 RWQCB Basin Plan's established beneficial uses for the Sacramento San Joaquin Delta which include municipal and domestic supply, irrigation and stock watering agriculture supply, industrial process and service supply, contact and non-contact recreation, warm and cold freshwater habitat, warm and cold migration of aquatic organisms, warm spawning, reproduction, and/or early development, wildlife habitat and navigation.

Ground Water

This project is located in the San Joaquin Valley Groundwater Basin Tracy Subbasin 5-22.15 Ground Water Basin. The existing beneficial uses of this groundwater resource according to the Basin Plan include municipal and domestic water supply, industrial process water supply, industrial service water supply, and agricultural water supply.

2.3.3 Direct Impacts

Storm Water

Caltrans has performed many studies to monitor and characterize highway storm water runoff throughout the State. Pollutants of Concern in Caltrans runoff found from the

"Final Report of the Caltrans BMP Retrofit Pilot Program", were phosphorus, nitrogen, copper (total or dissolved), lead (total or dissolved), zinc (total or dissolved), sediments, general metals (unspecified metals), and litter. Some sources of these pollutants are natural erosion, phosphorus from tree leaves, combustion products from fossil fuels, trash and debris cast off by motorists, and the wearing of brake pads.

The net added impervious area, due to the median buffer and shoulder widening, will increase roadway runoff. The area of soil disturbance is approximately *6 ha (13 ac),* adding approximately 3.8 ha (9.3 ac) of new pavement (impervious) area. The project will result in less than significant impact to the beneficial uses and water quality objectives of the receiving water bodies. The no build alternative will not have any new water quality impacts.

Ground Water

Ground water will most likely be encountered during the widening of Kellogg Creek Bridge. Early discussion will need to be initiated regarding the handling and disposal of groundwater water during construction. The groundwater will need to be tested for potential contamination as a part of the Hazardous Waste Site Investigation. Handling and disposal of the groundwater will be based on the level of contaminants reported in the Site Investigation Report.

2.3.4 Cumulative Impacts

The framework for cumulative impact analysis in the areas of both water quality and biology is the immediate roadside area and the Kellogg Creek-bed, which crosses the project area. Because this project would modify an existing facility at essentially the same level of capacity, it will not cause or contribute to significant cumulative environmental impacts in these areas. Environmental protection measures incorporated into the project will preclude adverse impacts on adjacent properties and restore areas directly affected to a state that closely approximates existing conditions.

2.3.5 Aviodance, Minimization and/or Mitigation Measures

1) Section 401 of the Clean Water Act

A 401 Water Quality Certification from Region 5 RWQCB is required.

2) Section 402 of the Clean Water Act

According to Caltrans NPDES permit and the Construction General Permit, Best Management Practices (BMPs) will be incorporated to reduce the discharge of pollutants

during construction as well as permanently to the Maximum Extent Practicable (MEP). These BMPs fall into three categories, Temporary Construction Site BMPs, Design Pollution Prevention BMPs, and Permanent Treatment BMPs.

(a) Construction Site BMP

Construction Site BMPs are implemented during construction activities to reduce pollutants in storm water discharges throughout construction. Grading of existing slopes will be required. Temporary silt fence, stockpile cover, stabilized construction entrance/exit and temporary soil stabilizers are some of the temporary erosion and water pollution control measures that may be utilized in combination to prevent and minimize soil erosion and sediment discharges during construction. Given a soil disturbance of greater than 0.4 hectares (1 acre), a Storm Water Pollution Prevention Plan (SWPPP) will be developed during construction. This dynamic document addresses the deployment of various erosion and water pollution control measures that are required commensurate to changing construction activities.

(b) Permanent Design Pollution Prevention BMPs

Design Pollution Prevention BMPs are permanent measures to improve storm water quality by reducing erosion, stabilize disturbed soil areas, and maximize vegetated surfaces. Erosion control measures will be provided on all disturbed areas to the extent feasible. These measures will utilize a combination of source and sediment control measures to prevent and minimize erosion from soil disturbed areas. Source controls can utilize erosion control netting in combination with hydroseeding. The biodegradable netting is effective in providing good initial mechanical protection while seed applied during the hydroseeding operation germinates and establishes itself. Other forms of source control such as tacked straw may also be used when applicable. Sediment controls such as biodegradable fiber rolls can be used to retain sediments and to help control runoff from disturbed slope areas. These measures will be investigated during the final design phase.

Outlet protection and velocity dissipation devices placed at the downstream end of culverts and channels are also Design Pollution Prevention BMPs that reduce runoff velocity and control erosion and scour. The need of these devices for this project will also be further investigated during the design phase.

(c) Permanent Treatment BMPs

Treatment BMPs are permanent devices and facilities treating storm water runoff. Caltrans approved Treatment BMPs are Biofiltration Swales, Infiltration Basins, Detention Basins, Traction Sand Traps, Dry Weather Flow Diversions, Media Filters, Gross Solids Removal Devices (GSRDs), Multi-chamber Treatment Trains, and Wet Basins.

Consideration of Treatment BMPs will follow the Evaluation Documentation Form process and documented in the Storm Water Data Report for this project. (Caltrans 2007A)

2.4 Biology, including Wetlands

2.4.1 Regulatory Setting

This section covers the following biological areas: wetlands and other waters, plant species, animal species, threatened or endangered species, natural communities, and invasive species. A summary of regulatory requirements relative to each area follows:

Wetlands and Other Waters

Wetlands and other waters, including Kellogg and Kendall Creeks, are protected by the federal Clean Water Act (CWA), which regulates the discharge of dredged or fill material into them. CWA Section 404 establishes a regulatory process and permit program to control such discharges. The Section 404 permit program is run by the U.S. Army Corps of Engineers (USACE) with oversight by the Environmental Protection Agency (EPA). CWA Section 401 requires a water quality certification from the applicable Regional Water Quality Control Board (RWQCB) prior to issuing a Section 404 permit.

At the state level, wetlands and waters are regulated by the Department of Fish and Game (CDFG) and RWQCBs. In this case, Region 5 RWQCB will provide the necessary water quality certification.

The East Contra Costa County Habitat Conservation Plan/Natural Community Conservation Plan ("HCP/NCCP," or "Plan") is intended to provide a comprehensive framework to protect natural resources in eastern Contra Costa County, while improving and streamlining the environmental permitting process for certain projects that would cause impacts on endangered and threatened species.

Plant Species:

The U.S. Fish and Wildlife Service (USFWS) and California Department of Fish and Game (CDFG) share regulatory responsibility for the protection of threatened, endangered, or other special-status species under the Federal Endangered Species Act (FESA) and/or the California Endangered Species Act (CESA). The regulatory requirements for FESA can be found at United States Code 16 (USC), Section 1531, et. seq. The regulatory requirements for CESA can be found at California Fish and Game Code, Section 2050, et. seq. Department projects are also subject to the Native Plant Protection Act (Fish and Game Code, Section 1900-1913), and the California Environmental Quality Act (Public Resources Code, Sections 2100-21177).

Animal Species:

Many state and federal laws regulate impacts to wildlife. At the federal level these include the Migratory Bird Treaty Act and the Fish and Wildlife Coordination Act. The California Fish and Game Code contain state laws and regulations pertaining to wildlife. The U.S Fish and Wildlife Service (USFWS), the National Marine Fisheries Service (NOAA Fisheries) and the California Department of Fish and Game (CDFG) are responsible for implementing these laws, which require preparation of habitat assessment and conservation plans to protect wildlife.

The U.S. Fish and Wildlife Service (USFWS) and California Department of Fish and Game (CDFG) share regulatory responsibility for the protection of threatened, endangered, or other special-status species under the Federal Endangered Species Act (FESA) and/or the California Endangered Species Act (CESA). The regulatory requirements for FESA can be found at Title 16 United States Code (USC), Section 1531, et. seq.

Threatened or Endangered Species:

The primary State law protecting threatened or endangered species is the California Endangered Species Act (CESA), California Fish and Game Code, Section 2050, et seq, which is administered by the California Department of Fish and Game (CDFG). CESA requires project sponsors to implement measures to prevent intentional or unintentional loss of threatened or endangered species.

Natural Communities:

Where a project involves threatened or endangered species, FESA and CESA require consideration of the biological communities where species exist as well. FESA designates critical habitat to protect the primary constituent elements of threatened and endangered

species. FESA and CESA also designate natural communities of concern such as wetlands.

Invasive Species:

Federal Executive Order 13112, dated February 3, 1999, requires agencies administering federal highway funds to combat introduction or spread of invasive species, which are essentially non-native plants that are somehow harmful to the environment. Invasive species are specified on a list of noxious weeds established by each state. Caltrans does not use any of the species on the California list of noxious weeds for erosion control or landscaping. Therefore this project will not contribute to the growth of invasive species.

2.4.2 Affected Environment

State Route 4 is a corridor along the Carquinez Strait and the Sacramento/San Joaquin Delta. Regional demographics are primarily characterized by suburban residential development, areas of open space, agricultural land, and major industrial and oil refinery sites. The landscape near the project site consists of mostly developed areas and a mix of fields, vineyards, suburban development, and industrial sites. Outside the vicinity of the roadway prism, the landscape is agricultural fields and housing.

Location and topography strongly influence climate in the area of the project. The eastern San Joaquin Valley has hot, dry summers and cool winters. In the summer, a steady marine wind blows through the Golden Gate and up the Carquinez Strait. The average annual air temperature is 14.56° C to 15.78° C (58.2°F to 60.4°F), the average frost-free period is 266 to 365 days, and the average annual rainfall is 13.34 to 22.77 inches (Welch, 1977).

The general soil type in the project area is predominantly Kingile muck with slopes generally less than 2 percent. The Kingile series consists of very poorly drained soils in fresh-water marshes and old river channels. This soil type is subject to ponding. There is no hazard of water erosion but soil blowing is a moderate hazard where the soil is tilled (Welch, 1977).

Much of the dominant vegetation in the project area is characteristic of ruderal vegetation found along highways in this region. In addition there are some trees, and wetland vegetation growing within ditches and streams along or crossing the highway. Caltrans biologists did not identify the presence of any sensitive plants or suitable habitat for sensitive plant species during field surveys.

According to the California Department of Fish and Game's (CDFG) database, part of the project is located on the northernmost range of the federally endangered San Joaquin Kit Fox (***Vulpes macrotis mutica,*** SJKF) habitat. Habitat for other listed species includes giant garter snake, California tiger salamander, California red-legged frog, and valley elderberry longhorn beetle. Kellogg Creek may also provide habitat for delta smelt. In addition, USFWS published a 90-day finding which accepted a petition to list Longfin Smelt (*Spirinchus* thaleichthys) as threatened under the FESA. A 12-month review period is required prior to final determination by the USFWS.

2.4.3 Natural Communities

There are three different biological communities within and surrounding the project area. One community consists of upland habitat near the roadway dominated by ruderal (disturbed) grasses, herbs, and shrubs. The second community consists of roadside ditches throughout the project area that exhibit patches of hydrophytic vegetation. The third community consists of riparian habitat of Kellogg Creek, and Kendall Creek.

2.4.4 Wetlands and Waters Of The United States

Section 404 of the Clean Water Act gives jurisdiction to the USACE to regulate dredge and fill of/to wetlands and "waters of the U.S." The proposed project would permanently affect a total of approximately 0.433 acres of USACE jurisdictional "waters and wetlands of the United States." Two creeks are within the project limits. Kellogg Creek runs south to north direction from Kellogg Slough to Discovery Bay. At several locations, developments altered Kellogg Creek's natural flow and the creek flows parallel to highways and roads. Kendall Creek runs north from Italian Slough to Indian Slough and will not be affected by this project. Both creeks drain into the San Joaquin River. In addition, a culvert at an agricultural canal will be extended by 30ft. Because this project will affect Kellogg Creek and agricultural canal within the bed and banks, a Streambed Alteration Agreement from CDFG will also be required. USACE will assess jurisdictional determinations upon consultation.

2.4.5 Vegetation

Caltrans biologists did not identify any sensitive plant species growing within the project area during field surveys. The USFWS designated Byron Hot Springs and Clifton Court Forebay USGS Quadrangles as critical habitat for Contra Costa Goldfields. The USGS categorized the landcover for the project area as cropland and pasture.

In general, this landcover does not provide critical habitat for plant species. Biologists surveying the site characterized the habitat as ruderal. CNDDB records do not indicate the historical occurrence of any sensitive plant within the project area.

2.4.6 Special-Status Species

Special-status species are plants or animals that have been officially designated as threatened or endangered, or otherwise require special consideration: for example critical habitat or migratory birds. According to the USFWS species list dated March 12, 2007 and an evaluation of the project site, Caltrans Biologists determined that the following animal species need further evaluation and studies: giant garter snake, California tiger salamander, California red-legged frog, and San Joaquin Kit Fox. In addition, Kellogg Creek may require surveys for delta smelt and steelhead.

These are listed in Table 3 below.

Table 3: Special-Status Wildlife Species with Potential Habitat in the Project Area

Scientific Name	Common Name	Status	Occurrence
	Fish		
Hypomesus transpacificus	Delta Smelt	FT, ST	Possible
Spirinchus thaleichthys	Longfin Smelt	PT	Possible
Oncorhynchus mykiss irideus	Central Valley Steelhead	FT NMFS	Possible
	Amphibians/Reptiles		
Rana aurora draytonii	California red-legged frog	T PX	Possible
Ambystoma californiense	California tiger salamander	FT, SSC	Possible
Clemmys marmorata	Western Pond Turtle	SSC	Possible
Thamnophis gigas	Giant garter snake	FT,ST	Possible
	Mammals		
Vulpes macrotis mutica	San Joaquin kit fox	FE,ST	Possible
	Birds		
Buteo swainsoni	Swainson's Hawk	ST	Possible

Status Key

(E) Endangered-Listed (in the Federal Register) as being in danger of extinction.

(T) Threatened-Listed as likely to become endangered within the foreseeable future.

(PT) Proposed-Officially proposed (in the Federal Register) for listing as endangered or threatened.

(NMFS)-Species under the Jurisdiction of the National Marine Fisheries Service

(CA)-Listed by the State of California but not by the Fish and Wildlife Service

(PX)-Proposed Critical Habitat – The species is already listed. Critical habitat is being proposed for it.

(SSC)-Species of Concern Other species of concern to the Sacramento Fish and Wildlife Office

2.4.7 Cumulative Impacts

The framework for cumulative impact analysis in the areas of both water quality and biology is the immediate roadside area and the Kellogg Creek-bed, which crosses the

project area. Because this project would replace an existing facility at essentially the same level of capacity, it will not cause or contribute to significant cumulative environmental impacts in these areas. Environmental protection measures incorporated into the project will preclude adverse impacts on adjacent properties and restore areas directly impacted to a state that closely approximates existing conditions.

The project will not cause or contribute to a significant cumulative impact on the natural environment because construction period impacts will be contained within project boundaries and the long-term impacts are considered positive.

2.4.8 Avoidance, Minimization and/or Mitigation Measures

The following is a summary of measures that will be implemented during construction to reduce adverse environmental impacts. These are more fully described in the Natural Environment Study. All preventive measures will be devised and monitored by a qualified biologist.

Under the East Contra Costa County Habitat Conservation Plan (HCP), Caltrans will determine the areas of temporary and permanent impacts associated with this project. Impacts and mitigation are assessed based on categories developed by the HCP (Ch 9, HCP, Oct. 2006). USFWS requested compensation for impact via the HCP. Caltrans will consult with Army Corps of Engineers for impacts to wetlands and "Water of the U.S." (Waters). Caltrans will fully mitigate for impacts to Delta smelt under the authority of the CESA. This mitigation shall include buying credits at a CDFG-approved bank, restoring and protecting in perpetuity a minimum of 0.06 acres of DS habitat, or partnering with a local entity to conserve a minimum of 0.06 acres of DS habitat.

Caltrans will use best management practices (BMP) and exclusionary measures to prevent any and all impacts to listed species. In addition, Caltrans will exclude swallows from nesting under the bridges during the construction period. The Migratory Bird Treaty Act (MBTA) protects nesting of all migratory birds, including swallows. Caltrans will install exclusionary measures prior to March 1 in the year of construction to comply with MBTA. In addition, Caltrans will avoid where practicable effects to listed species and species of species concern. Caltrans will utilize environmentally sensitive area fencing to exclude the contractor from sensitive areas. Pre-construction surveys are required to find and remove species from sensitive area (particularly Kellogg Creek and the agricultural canal) prior to the start of construction.

- **Limit area used for construction:** Caltrans will limit construction activities to the smallest area possible. Construction areas will be clearly delineated by Caltrans

biologists, incorporated into the project plans and specifications, and clearly marked with environmentally sensitive area (ESA) fencing. Vegetation will be removed by hand in sensitive construction areas and near aquatic site to prevent harm to wildlife. (Caltrans 2007B)

2.4.9 Agency Coordination and Professional Contacts

Caltrans biologists determined that this project requires consultations with U.S. Fish and Wildlife Service, U.S. Army Corps of Engineers (USACE), and California Department of Fish and Game. Caltrans consulted with USACE with regard to Nationwide Permit 14. Caltrans met with the USACE Sacramento Office to request that they -be the lead agency for review this project because of this project proximity to that USACE regional office. Caltrans will submit a request for Jurisdictional Determinations according to the USACE Sacramento Office standards.

USFWS cites the East Contra Costa County Habitat Conservation Plan (HCP) in critical habitat announcements for the California red-legged frog and Alameda whipsnake. The listing states the HCP will sufficiently protect the primary constituent elements (PCE) of the species and therefore the USFWS did not establish critical habitat in East Contra Costa County for these species. In a meeting between USFWS and Caltrans, the USFWS requested that Caltrans compensate and negotiate with the HCP for impact to listed species. Upon ratification, Caltrans will consult with the HCP. The California Department of Fish and Game also supports the HCP. For CDFG impacts, Caltrans will also compensate for impact via the HCP.

Caltrans, as lead federal action agency, and in coordination with CDFG and NOAA fisheries, determined that this project will have no effect on listed salmonid species. Caltrans coordinated with the USFWS in order to obtain a biological opinion and incidental take statement for the threatened Delta smelt. This biological opinion was received on August 27, 2008.

2.5 Cumulative Impacts

2.5.1 Regulatory Setting

In section 15604 of the CEQA Guidelines, the Lead Agency, in evaluating the significance of the environmental effect of a project, shall consider direct physical changes in the environment, which may be caused by the project, and reasonably foreseeable indirect physical changes in the environment, which may be caused by the project. A direct physical change in the environment is a physical change in the environment, which is caused by and immediately related to the project. An indirect physical change in the environment is a physical change in the environment which is not immediately related to the project, but which is caused indirectly by the project. If a direct physical change in the environment in turn causes another change in the environment, then the other change is an indirect physical change in the environment.

Section 15355 of the CEQA Guidelines defines "cumulative impacts" as two or more individual effects that, when considered together, are either considerable or compound other environmental impacts. The cumulative impact from several projects is the change in the environment, which results from the incremental impact of the project when added to other closely, related past, present, and reasonably foreseeable probable future projects. Cumulative impacts can result from individually minor but collectively significant projects taking place over a period of time.

2.5.2 Local Context

The proposed safety project is consistent with the land use plans and policies of the Township of Discovery Bay and County General Plan. This project does not propose new capacity increasing measures, or physical changes to the environment on State Route 4 in the project area or surrounding vicinity.

2.5.3 Regional Context

SR 4 Bypass Project

The State Route 4 Bypass project (Bypass) is being developed in a cooperative effort among Contra Costa County and the cities of Antioch, Brentwood, and Oakley. The purpose of the Bypass is to ease traffic congestion in Brentwood and Oakley and provide access to the growing areas of southeast Antioch and western Brentwood. The Bypass will construct a new four-lane nine-mile freeway from the SR 4/SR 160 Interchange southward that will bypass Oakley and Brentwood and then connect to the existing SR 4

at Marsh Creek Road in eastern Contra Costa County. It is expected that Caltrans will relinquish the existing highway and adopt the Bypass as the new SR 4. The current environmentally approved project consists of a new four-lane divided highway between the SR 4/SR 160 junction and Balfour Road, and a two-lane roadway from Balfour Road south to Vasco Road at Walnut Boulevard. Marsh Creek Road will be widened to an improved two-lane road and will serve as the connection between the Bypass and the existing SR 4 in the Brentwood area.

Although the Bypass consists of a new four-lane divided highway between the SR 4/SR 160 junction and Balfour Road, the present connection with this project is a conventional two-lane highway. This configuration will match and be consistent with the proposed project and will provide an additional north /south route to the existing State Route 4. The combination of these two projects will not cause any new significant impacts to the region and is consistent with the intent of the General Plan.

2.5.4 Construction Phase Impacts

Transportation Management Plan

The Transportation Management Plan (TMP) will be a required component of the project. The TMP is a specialized program tailored to prevent and mitigate the impacts of construction projects by applying a variety of techniques including system management, demand management, construction strategies and public awareness measures. The detailed TMP will be prepared in a later stage of the project. The basic objectives of a TMP are to:

- Maintain efficient and safe movement of vehicles through the construction zone.
- Foster a high level of awareness of potential impacts among residents, agricultural and commercial motorists, travelers and the media.
- Minimize disruptions to traffic on State Route 4, the different intersections and nearby streets.